COMMANDERS DIGEST
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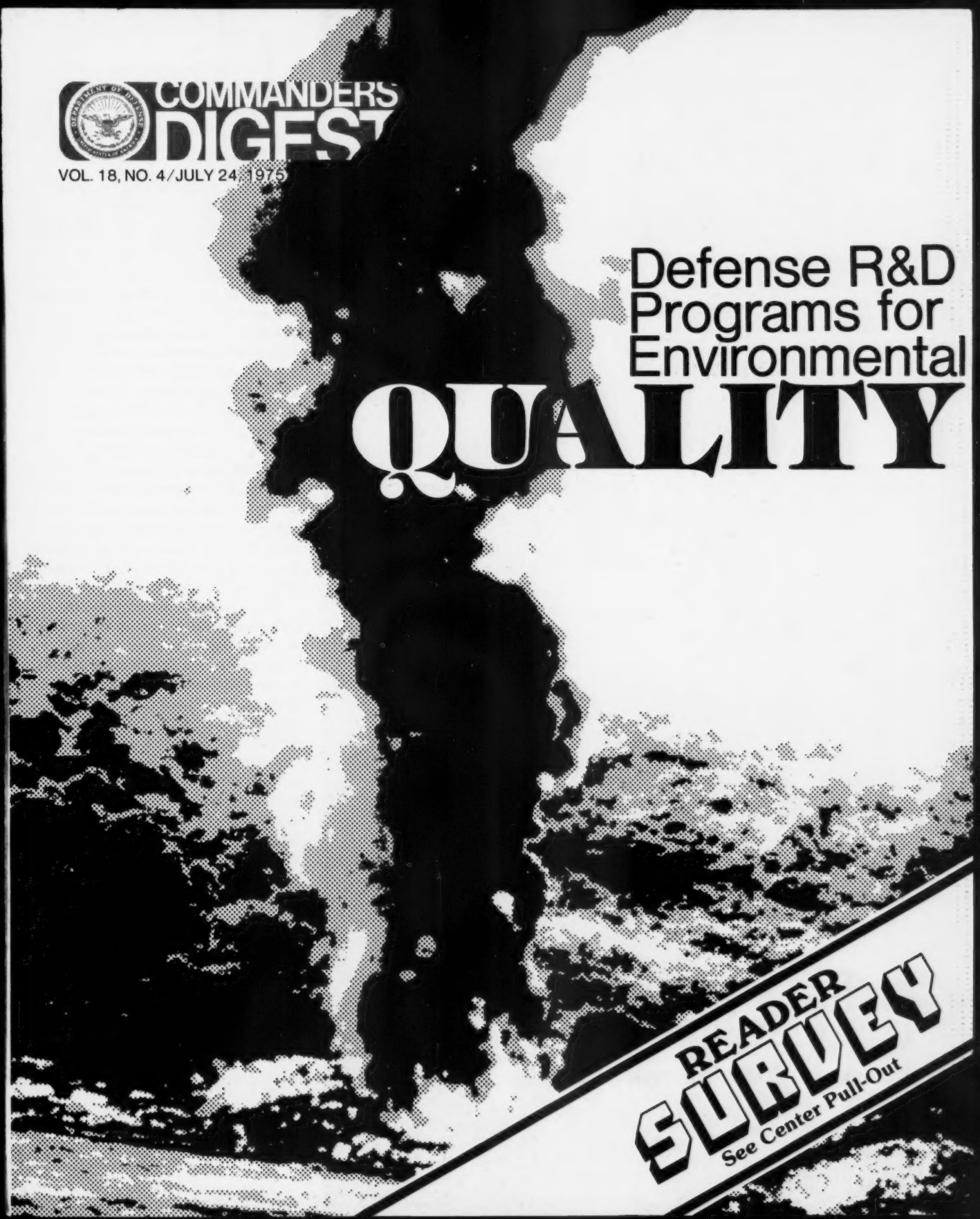
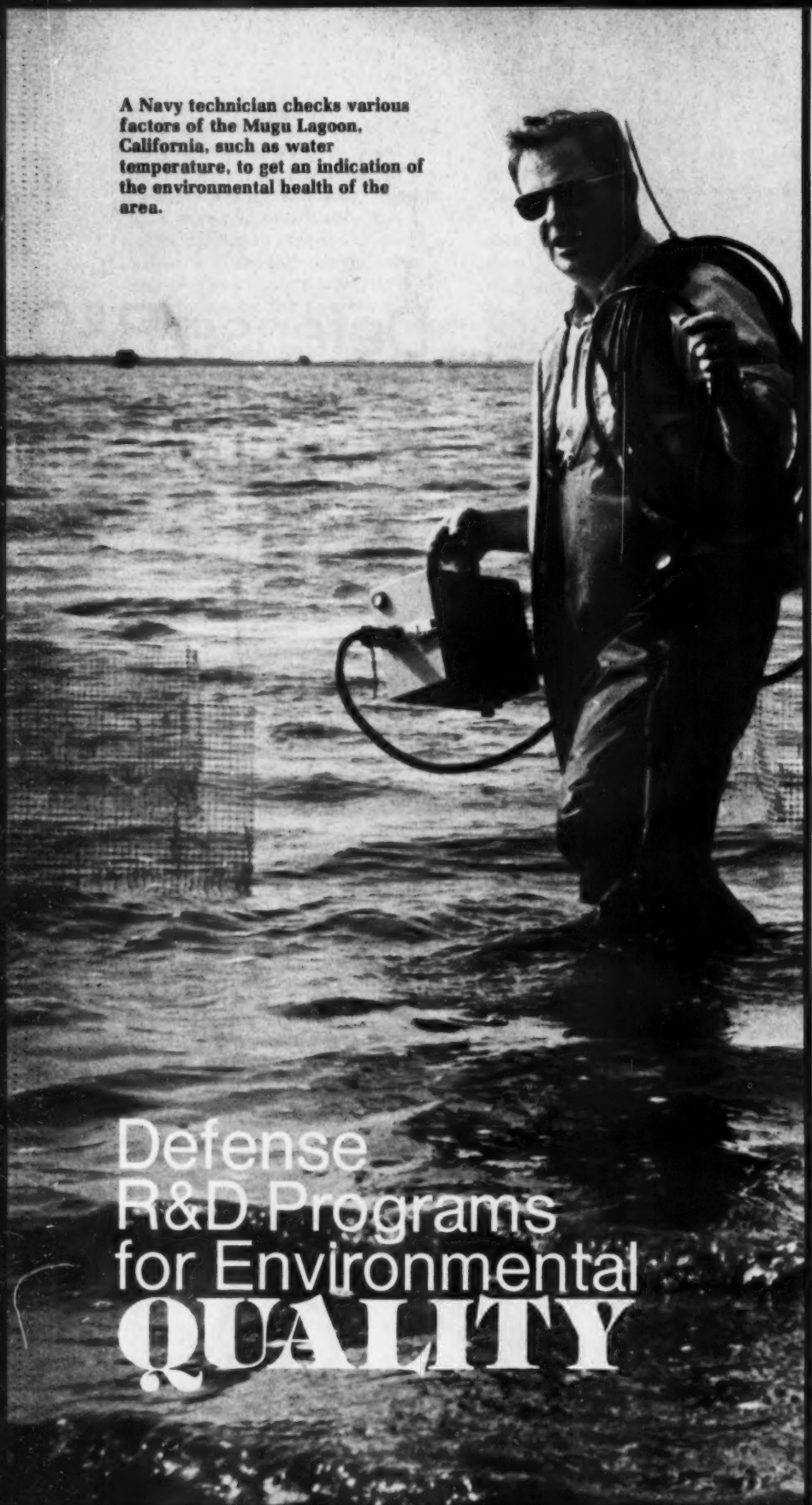
Defense R&D Programs for Environmental QUALITY



READER SURVEY
See Center Pull-Out



A Navy technician checks various factors of the Mugu Lagoon, California, such as water temperature, to get an indication of the environmental health of the area.

Defense R&D Programs for Environmental QUALITY

THE Department of Defense has always been very much aware of the impact of our national defense mission on the environment during system development, test and evaluation, actual operations, or just from our position as a large landholder operating many facilities in a worldwide environment.

BASIC POLICY

First let's address the policy for the Department of Defense R&D programs in environmental quality. Basic to the policy are a series of public laws and executive orders which are applicable to all Federal agencies. Public Law 91-190, the National Environmental Policy Act of 1969, and its implementation among Federal agencies by Executive Orders 11514 and 11752, made it mandatory for DoD to become involved in all aspects of environmental matters, including compliance with all Federal, State, and local criteria and standards regarding the environment.

These executive orders directed Federal agencies to provide leadership in protecting the environment and improving its quality. Since that time, we have had specific legislation addressing air quality, water quality, drinking water, solid wastes, noise control, and pesticides. DoD implementation has been effected by a series of directives. Directive 5100.50 establishes responsibilities within DoD as follows: The Assistant Secretary of Defense (Health and Environment) has the principal staff responsibility for administration. George Marienthal, Deputy Assistant Secretary of Defense (Enviromental Quality), is the principal in this area. The Assistant Secretary of Defense (Installations and Logistics) is responsible for planning, design, review, maintenance, and operation of facilities for the prevention and correction of environmental pollution.

The Director of Defense Research and Engineering is responsible for identification, coordination and direction of the research required to support the environmental quality program. The Secretaries of the Military Departments and the Director of the Defense Supply Agency are responsible for actual implementation programs, identification and development of corrective measures, and programming and budgeting to meet the identified needs. Representatives of these offices routinely meet as members of the DoD Environmental Quality Council to provide overall guidance and consider special broad problems in environmental quality. It is not necessary to dwell on policy matters but it is important to indicate that DoD desires to be responsive not only to our military requirements and needs, but also to the national needs and goals in regard to environmental quality. The DoD has quite a stake in maintenance of environmental quality since it is one of the largest landholders of the Federal agencies; we maintain approximately 760 military installations or bases worldwide.

OBJECTIVES

The objectives of our environmental quality R&D program are:

- to provide the basic technology to enable DoD to assess the environmental impact of its facilities and activities, and
- to develop equipment which can meet both environmental quality criteria and military requirements.

We must insure that in carrying out the necessary research and development programs to meet our weapons systems requirements for national security, we pursue also the ancillary R&D programs to insure that these systems do not impact on the environment, either during the test and evaluation, operations, or the ultimate disposal of an obsolete item or system. Additionally, we must conduct R&D programs to insure that our day-to-day operations and base activities do not cause environmental problems. In this latter area we depend largely on the civilian community or other agencies for assistance. In the DoD, we handle some materials and perform some operations and activities which are of little concern to the civilian community, such as explosives and propellants, large scale film processing and electroplating, remote operational locations, and after-burning jet aircraft. We do then have some problems unique to DoD which we must address.

We prioritize our environmental quality R&D efforts as follows:

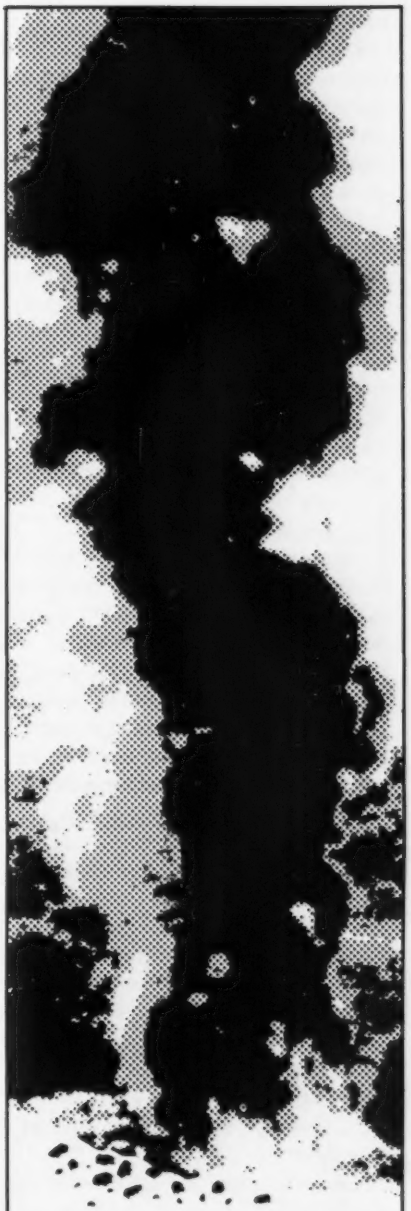
1. Develop data or solutions where a DoD operation or equipment may be significantly impacted because of environmental considerations where commercial solutions are not available;

2. Develop the technology necessary to control pollution arising from an operation or equipment unique to DoD;

3. Develop data pertinent to DoD operations to serve as the basis for standards or criteria where none exist or for modifying existing standards or criteria that appear to be excessively strict or based on inadequate data;

4. Develop R&D programs to make present pollution abatement technology more timely and cost effective; and

5. Engage in R&D efforts in which DoD has a unique expertise or has the equipment necessary to evaluate and extend the technology base in a



Mr. George Marienthal, Deputy Assistant Secretary of Defense (Environmental Quality) and Mr. Thomas R. Dashiell, staff specialist for Chemical Technology in the Office of the Director, Defense Research and Engineering, authored this Defense Department policy statement explaining DoD responsibilities for research and development efforts concerning environmental quality.

particular pollution area.

Priorities 1 and **2** are most important since the shutting down or curtailment of essential activities necessary to maintain our national defense posture can have serious consequences.

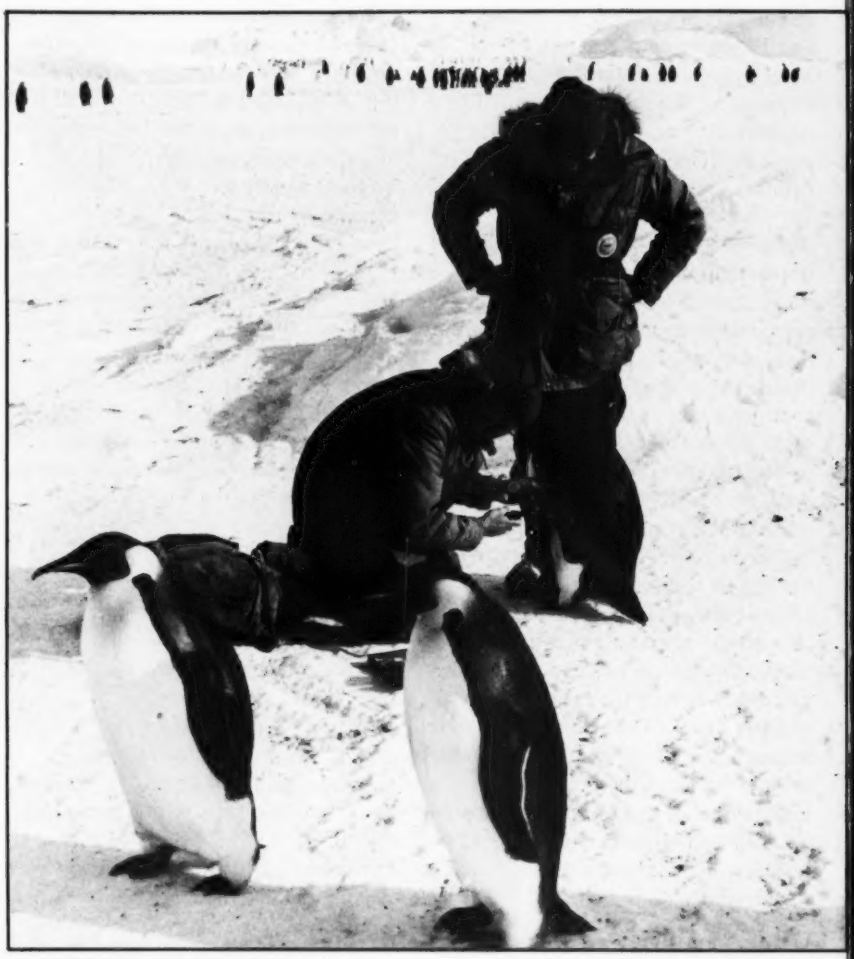
Priorities 3 and **4** are likewise important since industry may not develop equipment or techniques in a manner to match the time-frame or the rigorous operational requirements we need for field use.

Priority 5 can be demonstrated by our participation in the Department of Commerce Climatic Impact Assessment Program where the DoD provided the platform for their experiments, a high altitude supersonic aircraft. DoD selectively participates with other organizations in pollution abatement R&D projects having potential mutual benefits.

In recent years we have increased our efforts in environmental quality R&D. We performed many of these same efforts in the past; however, we associated them with a specific weapon system or installation as a part of the cost effectiveness, public relations, public health, or military requirements program. Unfortunately, the DoD Environmental Quality R&D efforts in the past were rather fragmented; they had low visibility, and were often generated in response to crisis situations. In terms of R&D programs or projects specifically termed environmental quality, in FY 1971 only about $9 million could be identified.

However, as implementation of the public laws and executive orders was undertaken, this rose to about $18 million in FY 1972, $22 million in FY 1973, $23 million in FY 1974, $30 million in FY 1975, and we are proposing $31 million for FY 1976.

These totals do not include medically-oriented, i.e., public health, program areas; these are carried in



Scientists working with the Navy during Operation Deep Freeze attach identification bands on penguins for population studies. Experts from the Army inventory wildlife to determine pollution effects on military reservations. Two Air Force technicians examine peanut plants to determine environmental effects of munitions residue.

READER SURVEY

WHAT'S YOUR OPINION?

The Department of Defense is interested in your opinions about *THE COMMANDERS DIGEST*. Your assistance in completing this questionnaire is requested. No names are required. Please read each question carefully and indicate your answer with an "X" in the space provided.

SAMPLE QUESTION: This survey is about

_____ A. ***All-Hands magazine***
_X____ B. ***The Commanders Digest***
_____ C. ***American Forces Press***

After you have completed the survey, please fold this sheet so the return address is visible, staple it closed and place it in the mail.

1. My current grade is: (write in)

(Example: E5 or 04 or GS9 or N/A)

2. **My service or employer is:**

_____ A. *Army*
_____ B. *Navy*
_____ C. *Air Force*
_____ D. *Marine Corps*
_____ E. *Coast Guard*
_____ F. *Department of Defense*
_____ G. *Other government agency*
_____ H. *Non-government civilian*
_____ L. *Not applicable. Specify:*

3. **My current status:**

_____ A. *National Guard*
_____ B. *Reservist*
_____ C. *Active Duty*
_____ D. *Retired*
_____ E. *Civilian employee*
_____ F. *Other—Specify:*

4. **My current primary job duty is:**

_____ A. *Commanding Officer*
_____ B. *Military Staff Officer*
_____ C. *Military, NCOIC*
_____ D. *Civilian, Supervisor*
_____ E. *Public Affairs/Information Officer*
_____ F. *Instructor*
_____ G. *Student*
_____ H. *Other Specify:*

Please remove this 4-page survey, answer the questions, and place it in the mail today.

THANK YOU!

MORE QUESTIONS

5.

How often have you used ***CD*** as a source document in preparing policy papers, briefings, reports, etc.?

_____ **A.** *Very frequently*
_____ **B.** *Sometimes*
_____ **C.** *Seldom*
_____ **D.** *Never*

6.

In your present assignment, is ***CD*** required reading?

A. *YES* **B.** *NO*

7.

How many issues of *CD* did you receive during the past year?

_____ **A.** *All 52*
_____ **B.** *39-51*
_____ **C.** *26-38*
_____ **D.** *26-38*
_____ **E.** *13-25*
_____ **F.** *Less than 13*

8.

When I receive ***CD*** I usually:

_____ **A.** *Read all of it*
_____ **B.** *Read most of it*
_____ **C.** *Read half of it*
_____ **D.** *Read some of it*
_____ **E.** *Scan it*

9. ***CD*** **only publishes Defense Department Policy Information. Please rate the quality of five recent issues listed below, considering how useful each type is to you in your job.**

		Outstanding	Good	Satisfactory	Poor	Did Not Read
The Strategic Bomber Force	**A.**	☐	☐	☐	☐	☐
Women in the Armed Forces	**B.**	☐	☐	☐	☐	☐
DoD Refugee Processing	**C.**	☐	☐	☐	☐	☐
Chemical Warfare & Biological Research	**D.**	☐	☐	☐	☐	☐
Why U.S. Forces Are In Europe	**E.**	☐	☐	☐	☐	☐

10. **Rate the amount of coverage you believe *CD* gives to ea of the following areas.**

		Too much	Just right	Not enou
A.	*The Military Threat*	_____	_____	_____
B.	*New DoD Manpower policies*	_____	_____	_____
C.	*Research & Development Programs*	_____	_____	_____
D.	*International affairs*	_____	_____	_____
E.	*DoD Management policies*	_____	_____	_____

11. **Rate Commanders Digest usefulness as your source of information for each of the following areas.**

		Very Useful	Useful	Somewhat Useful	No Use
A.	*The Military Threat*	☐	☐	☐	☐
B.	*New DoD Manpower policies*	☐	☐	☐	☐
C.	*Research & Development Programs*	☐	☐	☐	☐
D.	*International affairs*	☐	☐	☐	☐
E.	*DoD Management policies*	☐	☐	☐	☐

12. What is your reaction to each of these statements about *CD*?

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
A.	Its appearance (layout and design) meets high standards.	○	○	○	○	○
B.	It is timely in its coverage.	○	○	○	○	○
C.	It is a credible forum for new Defense Department policies.	○	○	○	○	○
D.	It has helped increase your professional knowledge of DoD policies and programs	○	○	○	○	○
E.	Authors of Commanders Digest articles are knowledgeable defense experts.	○	○	○	○	○
F.	Its level of reading difficulty is adequate for its readers.	○	○	○	○	○
G.	The subjects presented are of interest to senior military & civilian personnel	○	○	○	○	○

13. How does *CD* compare with other Service communication-related journals in the presentation of in-depth Defense policies?

- A. ☐ *One of the best*
- B. ☐ *Better than most*
- C. ☐ *About average*
- D. ☐ *Poorer than most*
- E. ☐ *One of the worst*
- F. ☐ *I have no basis for comparison*

14. Overall, I consider *CD* to be:

- A. ☐ *A valuable policy publication*
- B. ☐ *A useful publication*
- C. ☐ *Interesting, but not very useful*
- D. ☐ *Of no value at all*

15. How do you usually receive *CD*?

- _____ A. *Specific addressee*
- _____ B. *Intra-office routing*
- _____ C. *From a co-worker*
- _____ D. *From another office*
- _____ E. *From a friend*
- _____ F. *From a library*
- _____ G. *As a subscriber*
- _____ H. *Other—Specify:*

16. What do you do with *CD* after you have finished with it? (Mark as many as apply.)

- _____ A. *Keep it for personal reference*
- _____ B. *Pass it on to co-workers*
- _____ C. *Send it to the library*
- _____ D. *Discard it*
- _____ E. *Other Specify:*

17. How soon do you receive *CD* after the publication date?

- _____ A. *One week or less*
- _____ B. *Two weeks*
- _____ C. *Three weeks*
- _____ D. *One month or more*

18. In your opinion how frequently should *CD* be published?

- ☐ A. *Weekly*
- ☐ B. *Bi-weekly*
- ☐ C. *Monthly*
- ☐ D. *Quarterly*
- ☐ E. *Other*

MORE QUESTIONS →

19.

Listed below are 10 Defense Department policy subject areas. Please place the number "1" next to the topic you would like to see most frequently in the *Commanders Digest*, a "2" by the second most frequent topic, and numbers "3" through "10" next to each remaining topic.

_____Equal Opportunity/Race Relations	_____Military Benefits
_____National Security	_____Drug/Alcohol Abuse Policy
_____Department of Defense Missions	_____All-Volunteer Force
_____Energy Conservation Programs	_____Health Care Programs
_____Overseas Military Forces	_____Reserve Forces

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20. **If there are particular defense subject areas that you would like to see in the *CD*, please describe.**

21. **Other comments:**

the medical sciences budget. Comparably, some areas of environmental sciences which are applicable, such as oceanographic or stratospheric efforts, are not included here.

Let's now see the manner in which DoD is managing Environmental Quality R & D. In order to formulate a coordinated effort, one with well defined goals directed toward military needs but still reflecting the leadership directed in the executive orders the DDR&E decided, in consultation with the Assistant Secretary of Defense (Health and Environment), to use a management tool which has shown considerable value in the weapon system development area. This is the Area Coordinating Paper or ACP. The ACP is one of a family of documents which provides an overview of RDT&E efforts in a particular mission area. It is prepared by representatives of the Military Departments under the guidance of a responsible DDR&E individual. It identifies needs for new technology to meet system requirements; determines technological deficiencies by comparison of needs with current RDT&E programs; establishes new program objectives, considering current and future funding; and provides general guidance to the Military Departments.

Practically speaking, the purposes of the Environmental Quality ACP are to identify and define environmental problems that are unique to DoD, identify and define all current DoD R&D efforts in environmental quality; remedy duplication and deficiencies in the present program; develop a stable long-range R&D program at an adequate level of funding in order to establish a technology base to meet DoD problems; make DoD efforts in environmental quality R&D visible and to place them in proper perspective to other primary DoD efforts.

The format of the ACP departs somewhat from the usual presentation of environmental material since our programs in the DoD are generally mission oriented. Therefcre, we have chosen to address the Environmental Quality R&D program in a selected group of six technology areas. These are: aircraft, vessels, vehicles, weapons, facilities, and special programs. Within each of these are the necessary subsections to adequately cover the area. Within each technology area the particular media concerned is addressed, such as air quality, water quality, land quality or noise effects. Each of these areas is related to the particular applicable standards; an evaluation of the present technology made and an investment strategy developed. These are then compared against the current R&D programs and a supplemental R&D program is developed to meet the investment strategy, if this is required.

This Area Coordinating Paper was provided to other interested Federal agencies for comments in September 1974. These agencies included Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), Department of Commerce, Department of Agriculture, Department of the Interior, Department of State, Department of Health, Education and Welfare, Federal Energy Office, and the National Academy of Sciences. The comments which we received from these agencies indicated no conflict in our respective programs and no suggestions were offered to contradict or modify the programs or goals as set forth. All expressed the usefulness of

Crewmen guard against oil spills during replenishment operation between the oiler USNS Taluga and the attack aircraft carrier USS Constellation.

such documents in order to continue good communications and to avoid program duplication. It will be updated annually. It does not include the Corps of Engineers civil works program. The DDR&E monitors only our military related programs.

To address our specific efforts in Environmental Quality R&D, it's important to examine the program of each Military Department. Within the Department of the Army the principal laboratories involved are: Edgewood Arsenal, Maryland; Natick Laboratories, Natick, Massachusetts; Picatinny Arsenal, Dover, New Jersey; the Army Mobility Equipment R&D Command, Fort Belvoir, Virginia; the Construction and Engineering Research Laboratory, Champaign, Illinois, the Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire; the Waterways Experiment Station, Vicksburg, Mississippi; and the Army Medical Bioengineering Research and Development Laboratory, Frederick, Maryland. The Department of the

Army programs are funded at $9.8 million for FY 1975 and we propose $11.2 million for FY 1976. Approximately 53 per cent of this funding is in-house in FY 1975 and 119 professional and technical personnel are involved in this program at the above noted locations. We plan for about 44 per cent of funding in-house and 130 personnel in FY 1976.

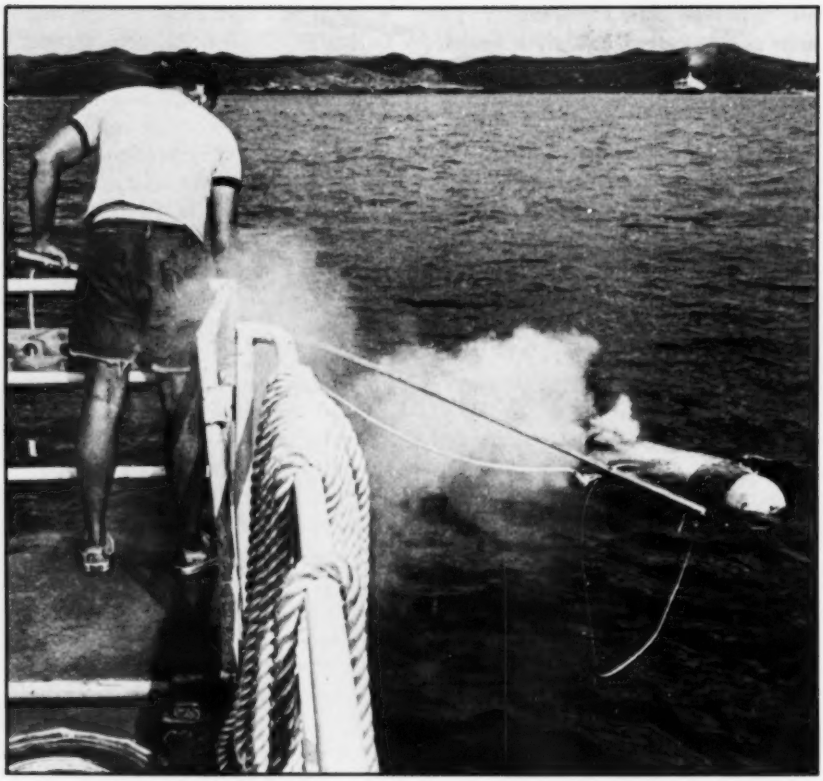
The principal efforts in the Army program are directed toward military production facilities including ammunition plants, military materiel, military installations and construction, and health standards and criteria development. Specific thrusts within these areas involve solid waste disposal including reuse and energy production, computer-assisted environmental impact assessment procedures applicable to military construction, prediction and control of blast and helicopter noise, development of less polluting manufacturing processes and waste treatment for explosives and propellants, development of treatment processes for field and small watercraft operations, disposal of hazardous materials, development of human health criteria for unique munition plant pollutants, health effects studies of contaminated land areas and land application of waste waters, and criteria development for direct recycle and reuse of treated waste waters. This last effort is a joint program with EPA and NASA and the watercraft programs are performed jointly with the Coast Guard.

The Department of the Navy environmental protection programs are performed at: Naval Research and Development Center, Annapolis, Maryland; Naval Civil Engineering Laboratory, Port Hueneme, California; Naval Undersea Center, San Diego, California; Naval Coastal Systems Laboratory, Panama City, Florida; Naval Air Development Center, Johnsville, Pennsylvania; and the Naval Air Propulsion Test Center, Trenton, New Jersey.

The Department of the Navy programs are funded at $14.0 million for FY 1975 and we propose $13.5 million for FY 1976. Approximately 54 per cent of this funding is in-house for FY 1975 with 48 per cent planned for FY 1976. About 150 professional and technical personnel perform the program at the noted locations. The principal efforts are directed toward the abatement of ship pollution, oil pollution, ordnance pollution, aircraft emissions, and harbor and facilities environmental enhancement. Within these areas we are attempting to develop: an integrated system for the disposal of all shipboard wastes; bilge and ballast oil water separators; reclamation techniques for propellants, explosives, and pyrotechnics and underwater explosion effects; ground support jet engine noise suppressors; solid waste handling including maintenance dredge material and ship offloading and marine environment evaluation. Many of these programs are joint efforts with the Maritime Administration and the Coast Guard.

The Department of the Air Force environmental quality programs are presently performed at: Air Force Weapons Laboratory, Kirtland Air Force Base,New Mexico; Cambridge Research Laboratory, Boston, Massachusetts; AF Civil Engineering Center, Tyndall Air Force Base, Florida; Aeropropulsion Laboratory, Flight Dynamics Laboratory, and Aerospace Medical Research Laboratory, all at Wright-Patterson Air Force Base, Ohio, and the School of Aerospace Medicine, Brooks Air Force Base, Texas.

The Department of the Air Force programs are funded at $5.9 million for FY 1975 and we propose funding of $6.1 million for FY 1976. Approximately 40 per cent of this funding is in-house in FY 1975 and 125 professional and technical



A Navy engineman-fireman prepares to snare a torpedo to guard against endangering sea life.

personnel perform the program at the noted locations. Little or no change is expected for FY 1976.

The principal efforts are directed toward source emission factors, ecological techniques for field assessment, pollutant transport and chemical mechanisms, environmental quality assessment modeling, advanced analytical techniques, and pollution control technology. Specific thrusts are aircraft engine emissions surveys; remote monitoring instruments; ambient air quality surveys of air bases; aircraft fueling; venting and dumping; methodology and case studies of ecological field techniques; and effects, hazards, and disposal of toxic industrial wastes such as heavy metals, solvents, paints, photo and plating wastes. Joint programs in the Air Force include work with EPA and NASA.

In addition to the joint R&D programs previously noted, DoD representatives have actively participated in various EPA task forces. We chaired Task Group 6 of the aircraft/airport noise study and have provided representatives to each EPA panel addressing noise research, development and demonstration activities. Additional coordination of our programs with the other agencies is accomplished by joint program review meetings such as one sponsored at the Naval Academy by our office last September. All the Military Departments reviewed their programs for the first two days. This was followed by a one-day workshop on specific problem areas. Invited speakers from the Council on Environmental Quality and the R&D Office of the Environmental Protection Agency participated in the program. Subsequently, the Navy has sponsored a technology transfer meeting at the same location with State and Federal representatives.

We have attempted to provide an overview of the Department of Defense R&D programs in environmental quality. Time does not permit a great deal of detail, but we hope this presentation has provided you sufficient information to better understand the DoD commitment to environmental quality.

COMMANDERS DIGEST

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